

Maxime Pasquier

Research Engineer, Center for Transportation Research
Energy Systems Division (ES)
Argonne National Laboratory (ANL)

Professional Experience:

04/00-present Research Engineer
Center for Transportation Research, ES Division

Principal Investigator of a Department of Energy (DOE) funded research project aiming at quantifying the potential and identifying the technical barriers of hydrogen use for internal combustion engine hybrid electric vehicle applications through systems approach, research and development in partnership with industrial partners. Team leader of an innovative advanced vehicle and systems evaluation program. Create a unique testing methodology called Hardware-In-the-Loop (HIL) testing. Oversaw the development of this state-of-the-art testing methodology from its inception to its current state as an innovative concept interacting hardware with high fidelity virtual simulations. Responsible for developing generic control systems for engines, electric motors, and any hybrid vehicles sub-systems technologies in order to validate their performances in a vehicle context. Create standardized control code not available from off-the-shelf software: PSAT-PRO®. PSAT-PRO® has been officially registered by the U.S. Copyright Office and is used in all the test cells of the Center for Transportation's Advanced Powertrain Research Facility. Develop emulation techniques to validate advanced systems performance in hybrid and fuel cell vehicles context without having to build a prototype. Validate the performance of new vehicle concepts aimed at reducing fuel consumption and emissions. Develop fast, generic, and graphical post processing tools for internal model validation. Develop an optimal powertrain control based on diesel emissions reduction using the benefits of the CVT and hybridization. Demonstrate the potential of diesel engines for hybrid vehicles in terms of fuel consumption and emissions. Control an advanced powertrain including Diesel engine, electrical motor and continuously variable transmission (CVT) by emulating the vehicle and the battery. Component emulation techniques and HIL testing have been widely recognized by the Department Of Energy and the automotive industry. The success of the program is pushing automotive suppliers to test their latest innovative components in the Center for Transportation's Advanced Powertrain Research Facility using HIL.

9/98 – 3/00 Research Engineer
PSA Peugeot Citroen, R&D department, FRANCE

Responsible for the development of an evaluation method of electric parallel hybrid traction systems by modeling and simulation. Responsible for the development of the control laws of a prototype parallel hybrid electric vehicle. In charge of the control optimization of the prototype to increase fuel economy and drivability. Validate the control system on test stand, on chassis dynamometer and on the road. Perform on-road prototype testing to refine the control strategy in terms of vehicle performances, drivability and fuel consumption. Presentation of the prototype and the test results to the high management of PSA to decide the potential to produce the vehicle.

1/98 – 5/98 Engineer
PSA Peugeot Citroen, R&D department, FRANCE

Developed component-sizing software for Hybrid Electric Vehicles.

7/96 – 8/96 Assistant Engineer
Hydro Applications, FRANCE

Team leader: developed an automated testing bench for hydraulic pumps.

7/95 – 8/95 Assistant Engineer
Alstom, “Chantiers de l’Atlantique”, FRANCE

“Chantiers de l’Atlantique” is world leaders for the building of high-added value ships. Team leader assistant: In charge of electrical purchases for a part of the ship under construction.

Education:

2006 MBA Candidate, Northwestern University, Kellogg School of Management, Chicago, IL, USA

Technological Research Diploma, University of La Rochelle, FRANCE, 1999
Postgraduate degree

Industrial Systems Engineering School Diploma, EIGSI, FRANCE, 1998
M.S. degree

Advanced Mathematic Preparatory School, Aristide Briand, FRANCE, 1994

Science Baccalaureat, Aristide Briand, FRANCE, 1993
High School Diploma

Professional Society Activities:

Member of Society of Automotive Engineers
Society of Automotive Engineers Technical Paper Reviewer

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Publications: Peer Reviewed Conference Papers

- Unless otherwise noted, papers are 9-15 pages in length.
- All publications are to report findings of DOE-sponsored work

Pasquier M., Monnet G., Rousseau A., *Trade-Offs between Fuel Economy and Nitrous Oxide Emissions Using Fuzzy Logic Control with a Hybrid Continuously Variable Transmission Configuration*, SAE Paper 2003-01-0082, SAE 2003 World Congress & Exhibition, March 2003, Detroit, MI, USA

Pasquier M., Oh S., Kern J., Bohn T., Rousseau A., *Axial Flux Variable Gap Motor: Application in Vehicle Systems*, SAE Paper 2002-01-1088, SAE 2002 World Congress & Exhibition, March 2002, Detroit, MI, USA

Pasquier M., Rousseau A., *Validation Process of a Hybrid Electric Vehicle System Analysis Model: PSAT*, SAE Paper 2001-01-0953, SAE 2001 World Congress, March 2001, Detroit, MI, USA

Publications: Conference Papers (approved by conference committee)

Pasquier M., Duoba M., Hardy K., Rousseau A., Shimcoski D., *Evaluation of a CIDI Pre-transmission Parallel Hybrid Drivetrain with Continuously Variable transmission*, 19th International Battery, Hybrid and Fuel Cell Electric Vehicle Symposium & Exhibition (EVS19), Busan, Korea, (2002)

Pasquier M., Rousseau A., *PSAT and PSAT-PRO, an Integrated and Validated Toolkit from Modeling to Prototyping*, Proceedings of the 2001 Global powertrain Congress, Detroit, MI, USA

Pasquier M., Duoba M., Rousseau A., *Validating Simulation Tools for Vehicle System Studies Using Advanced Control and Testing Procedures*, 18th International Electric Vehicle Symposium (EVS18), Berlin, Germany, 12 pgs. (2001)

Pasquier M., Rousseau A., *Validation of a Hybrid Modeling Software (PSAT) Using its Extension for Prototyping (PSAT-PRO)*, Proceedings of the 2001 Global Powertrain Congress, Detroit, MI, USA

Pasquier M., Rousseau A., Ahluwahlia R., Deville B., Geyer H., *Modeling, Control and Validation of Fuel Cell Transient Behavior*, Fuel Cell Conference 2002

Publications: Other Reports and Documents

Pasquier M., Monnet G., *PSAT-PRO User Guide*, Hardware-In-the-Loop Control Software Documentation, 30 pgs., (2001)

Pasquier M., *Detailed Description of ANL Center for Transportation Research's Prototyping Program Activities*, DOE Report, 26 pgs., (2001)

Pasquier M., Rousseau A., *Simulation and Validation of Hybrid Electric Vehicles Using PSAT and PSAT-PRO*, Advisor Conference, Costa-Mesa, CA, USA (2000)

Oral Presentations:

Pasquier M., *Using Hardware-In-the-Loop to Maximize Efficiency and Reduce Emissions in a Diesel Continuously Variable Transmission Hybrid Electric Vehicle* (June 2003) presented to Andrew Brown, Jr., Executive Director, Engineering Competency, President, DTI/Research Labs and Product Government Affairs and Partnerships

Chris DeMinco, Manager, Fuel Cell Development and Applications

Linos Jacovides, Director, Research Labs

Tony Lee, Director, Technology Leveraging

Bryan Riley, Manager, Engineering Technology and Process

Sheila Ronis, President, The University Group

Pasquier M., *Hardware-In-the-Loop Project*, presented to David Garman, Assistant Secretary for Energy Efficiency and Renewable Energy, DOE (March 2003)

Pasquier M., *Diesel Continuously Variable Transmission Hybrid Electric Vehicle Project*, presented to John B. Ritch, Director General World Nuclear Association, ANL (November 2002)

Pasquier M., *Emissions reduction of a Diesel Continuously Variable Transmission Hybrid Electric Vehicle*, presented to distinguished representatives from DOE during the Advanced Powertrain Research Facility (APRF) dedication, ANL (November 2002)

Pasquier M., *Diesel Hybrid Electric Vehicle Optimization*, presented to Richard Moorer, Deputy Assistant Secretary EERE DOE, ANL (November 2002)

Pasquier M., *Maximizing Efficiency of a Diesel Continuously Variable Transmission Hybrid Electric Vehicle*, presented to Robert Culver, USCAR Executive Director, ANL (November 2002)

Pasquier M., *Evaluation of a CIDI Pre-transmission Parallel Hybrid Drivetrain with Continuously Variable transmission*, 19th International Battery, Hybrid and Fuel Cell Electric Vehicle Symposium & Exhibition (EVS19), Busan, Korea, (2002)

Pasquier M., *Validating Simulation Tools for Vehicle System Studies Using Advanced Control and Testing Procedures*, 18th International Electric Vehicle Symposium (EVS18), Berlin, Germany, (2001)

Pasquier M., *Using Forward Modeling of Hybrid Electric Vehicles with PSAT and PSAT-PRO*, Advisor Conference, Costa Mesa, CA, USA, (August 2000)

Pasquier M., *Simulation and Validation of Hybrid Electric Vehicle Using PSAT*, Global Powertrain Congress, Detroit, MI, USA, (2000)

Pasquier M., *Review of Hardware-In-the-Loop Accomplishments*, presented to DOE and System Analysis Team Merit Review, USCAR Headquarters, Southfield, MI (March 2002)

Pasquier M., et., al., *ANL Plan Proposal Focused on Critical Questions and Needs of DOE OAAT*, presented to Robert Kost, DOE OAAT Vehicle System Team, Washington DC, (June 2001)

Pasquier M., et., al., *ANL's System Analysis Program Briefing*, presented to Robert Kost, DOE OAAT Vehicle System Team, Washington DC, (July 2000)

Pasquier M., et., al., *Overview of ANL's FY01 Budget*, presented to PNGV System Analysis Team, USCAR Headquarters, Southfield, MI (August 2000)

Pasquier M., et., al., *DOE Hybrid Technology Systems Development Path*, presented to Robert Kost and Pat Sutton, DOE OAAT Vehicle System Team, Washington DC, (September 2000)

Pasquier M., Rousseau A., *PNGV System Analysis Toolkit Future Work*, presented to PNGV System Analysis Team, USCAR Headquarters, Southfield, MI (May 2000)

Pasquier M., *Modelisation, Simulation et Prototypage d'un Véhicule Hybride à Variation Continue par Déivation de Puissance, Modeling, Simulation and Prototyping of a Hybrid*

Vehicle with a Continuously Variable Transmission by Power Derivation, presented to PSA Peugeot-Citroen Research and Innovation Management for review of the Parallel Hybrid Vehicle Project and decision to produce the prototype, Paris, FRANCE, (March 2000).

Pasquier M., *Status and Future Plans for Prototyping Program*, presented to Robert Kost and Pat Sutton, DOE OAAT Vehicle System Team, Washington DC, (March 2001)

Pasquier M., Larsen B., Duoba M., *ANL's System Analysis Program*, presented to Robert Kost and Pat Sutton, DOE OAAT Vehicle System Team, Washington DC, (August 2000)

Pasquier M., et., al., *Status of ANL FY01 System Analysis Annual Operating Plan*, presented to DOE OAAT Vehicle System Team and NREL, Denver, CO, USA (May 2001)

Pasquier M., *Hardware-In-the-Loop Activities*, presented to Daniel Cadet, Alstom International Network Director, ANL, (November 2002)

Pasquier M., Larsen B., Duoba M., Rousseau A., *Presentation of Hybrid Electric Vehicle Modeling and Prototyping Work at ANL in Support of the PNGV System Analysis Tech Team*, presented to Robert Kirk, DOE OAAT director, (May 2000)

Pasquier M., *Prototyping Program 5 Year Plan*, presented during a DOE coordination meeting, (January 2001)

Pasquier M., *ANL's Hardware-In-the-Loop and System Control Capabilities*, presented to David Polletta, Vice President, Alex Severinsky, Chief Executive Officer, Theodore Louckes, Chief Operating Officer, PAICE, ANL (September 2001)

Pasquier M., et., al., *Roles and Relationships of DOE SAT Program Computer-based Tools*, presented to DOE OAAT Vehicle System Team and NREL, Washington DC, USA (June 2001)

Pasquier M., Duoba M., Larsen, R.P, *Heavy Vehicle System Analysis at ANL* presented to DOE Sponsors in the Office of Heavy Vehicle Technology (Aug. 2000).

Pasquier M., *DOE OAAT Objectives Achieved With ANL Prototyping Activities*, presented to DOE Merit Review of ANL Systems Analysis Program, USCAR Headquarters, Southfield, MI (April 2001).

Pasquier M., *Review of Prototyping Program*, presented for the DOE Merit Review of ANL Systems Analysis Program, USCAR Headquarters, Southfield, MI (Dec. 2000).

Pasquier M., Duoba M., Larsen R.P, Hardy K., Rousseau A., *Argonne's Hybrid Electric Vehicle Technology Development Program* presented to International Truck and Engine Company proposing joint research, Melrose Park, IL (June 2001).

Pasquier M., *Review of Hardware-In-the-Loop Accomplishments DOE Systems Analysis Merit Review*, USCAR Headquarters, Southfield, MI (March 2002).